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1. (Original) An optical fiber, comprising:

a photosensitive core comprising a concentration of a first material that increases the refractive index of the core and a concentration of a second material that is other than boron and that reduces the refractive index of the core;

a cladding disposed about the core for tending to confine light to the core; and

at least one longitudinally extending region having a thermal coefficient of expansion (TCE) that is different from the TCE of the cladding whereby the optical fiber is photosensitive and birefringent.

2. (Original) The optical fiber of claim 1, wherein the at least one longitudinally extending region comprises at least one pair of longitudinally extending regions disposed in diametrically opposed portions of the cladding and spaced from the core.

3. (Original) The optical fiber of claim 1 further comprising an index grating.

4. (Original) The optical fiber of claim 1 wherein the core comprises silicon dioxide (SiO_2), the first material comprises germanium and the second material comprises fluorine (F).

5. (Original) The optical fiber of claim 1 wherein the core consists essentially of silicon dioxide (SiO_2), fluorine (F) and at least one oxide of germanium.

6. (Original) The optical fiber of claim 1 wherein the core consists essentially of silicon dioxide (SiO_2) doped with a concentration of germanium dioxide (GeO_2) of at least about 10% by weight and a concentration of fluorine of at least about 0.1% by weight.

7. (Original) The optical fiber of claim 4 wherein the concentration of germanium dioxide (GeO_2) is at least about 10.0% by weight and the concentration of fluorine (F) is at least about 0.1% by weight.

8. (Original) The optical fiber of claim 4 wherein the concentration of germanium dioxide (GeO_2) is from about 10.0% by weight to about 40.0% by weight.

9. (Original) The optical fiber of claim 4 wherein the concentration of fluorine (F) is from about 0.1% by weight to about 5.0% by weight.

10. (Original) The optical fiber of claim 4 wherein the concentration of germanium dioxide (GeO_2) is from about 10.0% by weight to about 20.0% by weight.

11. (Original) The optical fiber of claim 4 wherein the concentration of fluorine (F) is from about 0.2% by weight to about 3.0% by weight.

12. (Original) The optical fiber of claim 1 wherein the core comprises silicon dioxide (SiO_2) and at least one of the first material and the second material comprises at least one element selected from the group consisting of germanium (Ge), tin (Sn), cerium (Ce) and tantallum (Ta).

13. (Original) The optical fiber of claim 2 wherein the longitudinally extending regions each have a generally circular outer perimeter.

14. (Original) The optical fiber of claim 1 wherein the fiber has a polarization beat length of less than 25 mm at a wavelength of 1550 nm.

15. (Original) The optical fiber of claim 1 wherein the optical fiber has a second mode cutoff wavelength of less than 1800 nanometers.

16. (Original) The optical fiber of claim 1 wherein said cladding comprises an index of refraction, and wherein said fiber includes a second cladding disposed about said cladding, said second cladding comprising a second index of refraction that is less than said first index of refraction.

17. (Original) The optical fiber of claim 16 wherein the fiber comprises a rare earth.

18. (Original) The optical fiber of claim 17 wherein the rare earth comprises ytterbium.

19. (Original) The optical fiber of claim 16 wherein the core comprises a numerical aperture of no greater than 0.09.

20. (Original) The optical fiber of claim 16 wherein the core of the fiber is multimode and the fiber has a V number of at least 4 at a wavelength of 1550 nm.

21. (Original) The optical fiber of claim 16 wherein the core of the fiber is multimode and the fiber has a V number of at least 4 at a wavelength of 1550 nm and wherein the core comprises a numerical aperture of no greater than 0.09.

22. (Original) The optical fiber of claim 21 wherein the at least one longitudinally extending region comprises at least one pair of longitudinally extending regions spaced from the core, each of said pair having a generally circular outer perimeter.

23. (Original) The optical fiber of claim 16 wherein the core has a diameter of greater than 25 microns.

24. (Original) The optical fiber of claim 1 wherein the core comprises a numerical aperture of no greater than 0.09.

25. (Original) The optical fiber of claim 1 wherein the core comprises a V number of at least 4 at a wavelength of 1550 nm.

26. (Original) The optical fiber of claim 1 wherein the fiber comprises a rare earth.

27. (Currently Amended) An optical fiber, comprising:

a core comprising silicon dioxide (SiO_2) doped with germanium dioxide (GeO_2) and fluorine (F) and wherein the concentration of germanium dioxide (GeO_2) is from about 10.0% by weight to about 40.0% by weight and the concentration of fluorine (F) is from about 0.1% by weight to about 5% by weight;

a silica cladding disposed in coaxial relationship with the core; and

a plurality of longitudinally extending regions having a generally circular outer perimeter is disposed in diametrically opposed portions of the cladding, the regions being spaced from the core and each of the regions having a thermal coefficient of expansion (TCE) that is different from that of the cladding and each of the regions comprising silicon dioxide (SiO_2) doped with boron trioxide (B_2O_3), whereby the optical fiber is photosensitive and birefringent.

28. (Original) An optical fiber, comprising:

a core;

a cladding disposed about the core;

means for applying stress to the core to create birefringence during propagation of light through the optical fiber; and

means for receiving an index grating, the means for receiving an index grating including a concentration of a first material that increases the refractive index of at least one of the core and the cladding and a concentration of a second material that reduces the refractive index of the one of the core and the cladding, the second material being other than boron.

29. (Original) The optical fiber of claim 28 wherein the means for applying stress to the core comprises diametrically opposed longitudinally extending regions, the regions being spaced from the core and each of the regions having a thermal coefficient of expansion that is different from that of the cladding.

30. (Original) An optical fiber, comprising:

a photosensitive core comprising a concentration of germanium of at least 10 % by mole and the core being substantially free of a refractive index reducing material;

a cladding disposed about the core for tending to confine light to the core; and

at least one longitudinally extending region having a thermal coefficient of expansion (TCE) that is different from the TCE of the cladding whereby the optical fiber is photosensitive and birefringent.

31. (Original) The optical fiber of claim 30 wherein the core comprises a concentration of germanium dioxide (GeO_2) of at least 15 % by mole.

32. (Original) The optical fiber of claim 30 wherein the optical fiber has a numerical aperture (NA) of larger than 0.2.

33. – 45. (Canceled)

46. (Currently Amended) A polarization-maintaining double-clad optical fiber, comprising:

an axially extending core comprising an active material and an index of refraction;

a first cladding disposed about said core, said first cladding comprising a first index of refraction that is less than said index of refraction comprised by said core, said first cladding further comprising a thermal coefficient of expansion (TCE) and a circular outer perimeter;

a second cladding disposed about said first cladding, said second cladding comprising a second index refraction that is less than said first index of refraction comprised by said first cladding;

a pair of axially extending stress inducing regions ~~constructed and arranged to make said fiber polarization-maintaining~~ for providing birefringence, each of said regions having a TCE that is different than said TCE of said first cladding, and each of said regions being circular and being spaced from said core; and

wherein said fiber is constructed and arranged to provide an absorption per unit length that is within 15 percent of a test fiber that is identical to said fiber except that the outer perimeter of the first cladding of the test fiber is shaped as an octagon.

47. (Currently Amended) A polarization-maintaining double-clad optical fiber, comprising:

an axially extending core comprising an active material and an index of refraction, said active material for, responsive to absorbing pump light, providing light having a wavelength that is different than the wavelength of the pump light;

a first cladding disposed about said core, said first cladding comprising a first index of refraction that is less than said index of refraction comprised by said core, said first cladding further comprising a thermal coefficient of expansion (TCE), said first cladding for receiving the pump light for absorption by said active material;

a second cladding disposed about said first cladding, said second cladding comprising a second index refraction that is less than said first index of refraction comprised by said first cladding;

a pair of axially extending stress inducing regions ~~constructed and arranged to make said fiber polarization-maintaining~~ for providing birefringence, each of said regions having a TCE that is different than said TCE of said first cladding, each of said regions being spaced from said core; and

wherein said pair of stress inducing regions can cause sufficient scattering of pump light received by said first cladding such that the absorption of pump light per unit length of said fiber is within 15 percent of ~~at least one of the absorption per unit length when said second cladding has a circular outer perimeter and~~ the absorption per unit length when said second cladding has an outer perimeter shaped as an octagon.

48. (Original) The optical fiber of claim 47 wherein said outer perimeter of said second cladding is circular.

49. (Original) The optical fiber of claim 47 wherein said outer perimeter of said second cladding is shaped as an octagon.

50. (New) The optical fiber of claim 47 wherein said optical fiber has a polarization beat length of less than 25 mm measured at a wavelength of 1550 nm.

51. (New) The optical fiber of claim 47 wherein said optical fiber has a polarization beat length of less than 10 mm measured at a wavelength of 1550 nm.

52. (New) The optical fiber of claim 47 wherein said optical fiber has a second mode cutoff wavelength of less than 1800 nanometers.

53. (New) The optical fiber of claim 47 wherein said optical fiber has a second mode cutoff wavelength of less than 1200 nanometers.

54. (New) The optical fiber of claim 47 wherein said core comprises a numerical aperture of greater than 0.25.

55. (New) The optical fiber of claim 47 wherein said core comprises a numerical aperture of no greater than 0.13.

56. (New) The optical fiber of claim 47 wherein said core comprises a numerical aperture of no greater than 0.09.

57. (New) The optical fiber of claim 47 comprising a wavelength of operation at which said active material can provide light responsive to being pumped by light having a different wavelength, and where said core comprises a V number of greater than 2.405 at said wavelength of operation.

58. (New) The optical fiber of claim 57 wherein said core comprises a V number of greater than 4 at said wavelength of operation.

59. (New) The optical fiber of claim 48 wherein said optical fiber has a polarization beat length of less than 25 mm measured at a wavelength of 1550 nm.

60. (New) The optical fiber of claim 48 wherein said optical fiber has a second mode cutoff wavelength of less than 1800 nanometers.

61. (New) The optical fiber of claim 48 wherein said optical fiber has a second mode cutoff wavelength of less than 1200 nanometers.

62. (New) The optical fiber of claim 48 wherein said core comprises a numerical aperture of greater than 0.25.

63. (New) The optical fiber of claim 48 wherein said core comprises a numerical aperture of no greater than 0.13.

64. (New) The optical fiber of claim 48 wherein said core comprises a numerical aperture of no greater than 0.09.

65. (New) The optical fiber of claim 48 comprising a wavelength of operation at which said active material can provide light responsive to being pumped by light having a different wavelength, and where said core comprises a V number of greater than 2.405 at said wavelength of operation.

66. (New) The optical fiber of claim 65 wherein said core comprises a V number of greater than 4 at said wavelength of operation.

67. (New) A polarization-maintaining, double-clad optical fiber, comprising:

an axially extending core comprising an active material and an index of refraction;

a first cladding disposed about said core, said first cladding comprising a first index of refraction that is less than said index of refraction comprised by said core, said first cladding further comprising a thermal coefficient of expansion (TCE) and a circular outer perimeter;

a second cladding disposed about said first cladding, said second cladding comprising a second index refraction that is less than said first index of refraction comprised by said first cladding, said second cladding having a circular outer perimeter;

two and no more than two axially extending stress inducing regions for providing birefringence, each of said regions having a TCE that is different than said TCE of said first cladding, and each of said regions having a circular outer perimeter and being spaced from said core, and

wherein said fiber has a beat length of less than 25 millimeters measured at a wavelength of 1550 nanometers and a second mode cutoff wavelength of less than 1800 nanometers.